ATTACHMENT 22

CONFIDENTIAL INFORMATION UNDER THE PROTECTIVE ORDER

1   UNITED STATES DISTRICT COURT

2   NORTHERN DISTRICT OF CALIFORNIA

3   SAN JOSE DIVISION

4

5   CISCO SYSTEMS,   )

6   INC.,   )

7   Plaintiff,   )

8   vs.   ) No. 5:14-cv-05344-BlF (PSG)

9   ARISTA NETWORKS,   )

10   INC.,   )

11   Defendant.   )

12   _____

13   CONFIDENTIAL INFORMATION UNDER THE PROTECTIVE ORDER

14

15   VIDEOTAPED DEPOSITION OF ANTHONY J. LI

16   Palo Alto, CA

17   Monday, February 1, 2016

18   Volume I

19

20

21   Reported by: SUSAN F. MAGEE, RPR, CCRR, CLR

22   CSR No. 11661

23   JOB No. 2224600

24

25   PAGES 1-258

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CONFIDENTIAL INFORMATION UNDER THE PROTECTIVE ORDER

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 2       NORTHERN DISTRICT OF CALIFORNIA
 3         SAN JOSE DIVISION
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 5  CISCO SYSTEMS,   )
 6  INC ,        )
 7     Plaintiff,  )
 8       vs       ) No  5:14-cv-05344-BlF (PSG)
 9  ARISTA NETWORKS,  )
10  INC ,        )
11     Defendant   )
12  _____
13
14
15       CONFIDENTIAL INFORMATION UNDER THE
16  PROTECTIVE ORDER VIDEO DEPOSITION OF ANTHONY J  LI
17  taken on behalf of Defendant at WILSON, SONSINI,
18  GOODRICH & ROSATI, 601 South California Avenue,
19  Palo Alto, CA 94304, beginning at 9:13 a m  and
20  ending at 4:17 p m  on Monday, February 1, 2016,
21  before Susan F  Magee, RPR, CCRR, CLR, Certified
22  Shorthand Reporter No  11661
23
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 1  APPEARANCES:
 2
 3     For the Plaintiff:
 4       QUINN, EMANUEL, URQUHART & SULLIVAN
 5       BY: SEAN PAK, ESQ.
 6       50 California Street
 7       22nd Floor
 8       San Francisco, CA 94111
 9       (415) 875-6600
10       seanpak@quinnemanuel.com
11
12     For the Defendant:
13       KEKER & VAN NEST LLP
14       BY: RYAN WONG, ESQ.
15         BRIAN L. FERRALL, ESQ.
16       633 Battery Street
17       San Francisco, CA 94111-1809
18       (415) 773-6682
19       rwong@kvn.com
20       bferrall@kvn.com
21
22     The Videographer:
23       JEFREE ANDERSON
24
25
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1   Palo Alto, CA, Monday February 1, 2016
2   9:13 a.m.
3
4   THE VIDEOGRAPHER: Good morning. We're on
5 the record at 9:13 a.m. on February 1st, 2016. This
6 is the video recorded deposition of -- so sorry. Of
7 Anthony Li here with our court reporter Susan Magee.
8   My name is Jefree Anderson. We are here
9 from Veritext Legal Solutions at the request of
10 counsel for the -- defendant or the plaintiff?
11   MR. WONG: Defendants.
12   THE VIDEOGRAPHER: For the defendant. This
13 deposition is being held at Wilson Sonsini at
14 601 California Avenue, Palo Alto, California. The
15 caption of this case is Cisco Systems, Incorporated
16 vs. Arista Networks, Incorporated. The case number
17 is 5:14-cv-05344.
18   Please note that audio and video recording
19 will take place unless all parties agree to go off
20 the record, and microphones are sensitive and may
21 pick up whispers, private conversations and cellular
22 interference; so please be aware of that.
23   Beginning with our noticing attorney,
24 please state your name and the firm you represent.
25   MR. WONG: Ryan Wong from Keker & Van Nest
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1 for defendant Arista Networks.
2   MR. FERRALL: Brian Ferrall, Keker & Van
3 Nest, also for Arista.
4   MR. PAK: Sean Pak of Quinn for Cisco.
5   THE VIDEOGRAPHER: Thank you.
6   Will the court reporter please swear in the
7 witness.
8
9   ANTHONY J. LI,
10 having been administered an oath, was examined and
11 testified as follows:
12
13   EXAMINATION BY MR. WONG
14
15   Q. Good morning, Mr. Li.
16   A. Good morning.
17   Q. Please state your full name.
18   A. Anthony Joseph Li.
19   Q. Do you live in the Bay Area, Mr. Li?
20   A. I do.
21   ████████████████████
22 ██ ████████████████████████████
23 ████████████
24   Q. Mr. Li, do you understand that are you
25 testifying here in response to a subpoena in this
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3 (Pages 6 - 9)

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1 DEC systems, also had several IBM systems. VMCMS is
2 an operating system for IBM mainframes, and USC had
3 one and I had an account on the VM system.
4   Q. And what was the command syntax like for
5 the CLI on VMCMS?
6   A. I'm sorry. I don't remember.
7   Q. You mentioned RSX-IIM?
8   A. It's 11M.
9   Q. 11M. Sorry.
10   A. This was an operating system for PDP-11s.
11   Q. What are PDP-11s?
12   A. That was a computer built by
13 Digital Equipment Corporation.
14   Q. Do you recall the command syntax of the
15 command line interface used on the RSX-11M?
16   A. No, I'm sorry. I don't.
17   Q. You mentioned that the LinkedIn profile
18 that we marked as Exhibit 136 did not have your full
19 work history?
20   A. Correct.
21   Q. What work history is missing from your
22 LinkedIn profile?
23   A. In particular the sys admin positions that
24 I mentioned, summer internships predating. There
25 were several of those. Full-time positions that are

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1 not relevant to my professional experience,
2 particularly while I was in high school.
3   Q. Sure. After you graduated from USC, what
4 did you do then?
5   A. So I -- next fall I went to Rutgers and
6 spent a year there, hated it and immediately
7 transferred to USC.
8   Q. Oh, I'm sorry. My question was after you
9 graduated from USC, what did you do after that?
10   A. After USC? So I graduated in September
11 of 1990. I worked on a postdoc at USC with
12 Deborah Estrin and then took a position at
13 Cisco Systems.
14   Q. Do you know when you started at
15 Cisco Systems?
16   A. January 14th, 1991.
17   Q. Why did you join Cisco after graduating
18 from USC?
19   A. Lack of a better job.
20   Q. Did you apply elsewhere besides Cisco?
21   A. I did.
22   Q. And describe for me the projects that you
23 worked on while you worked at Cisco starting in
24 1991.
25   A. I worked on a wide, wide variety of

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1 projects throughout the router. I started off doing
2 mostly maintenance work and answering customer
3 questions. I then had several development projects.
4 My first development project was implementing
5 something called TCP header compression.
6   Q. And after you worked on TCP header
7 compression, what else did you work on while at
8 Cisco?
9   A. I had numerous routing -- small projects
10 within routing extending various interfaces and
11 extending protocols as necessary.
12   My next big project was actually working on
13 BGP, Border Gateway Protocol.
14   BY MR. WONG: Q. You mentioned TCP header
15 expression. What does TCP mean?
16   A. That's Transmission Control Protocol. It's
17 part of the Internet Protocol suite.
18   Q. Is TCP an industry standard?
19   A. It is.
20   Q. Was it an industry standard at the time you
21 worked on it at Cisco?
22   A. It was.
23   Q. What standard-setting body produced the TCP
24 standard?
25   A. That's a difficult question. The TCP

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1 standard was really a product of -- I guess the
2 ARPANET project, but this actually predates IETF
3 being accepted as a standards-making body, which is
4 a whole book in itself. Great deal of politics
5 behind that. So it was a de facto standard
6 effectively.
7   Q. What do you mean by "de facto standard"?
8   A. Which meant that the industry used it and
9 it was publicly available, everyone was free to
10 adopt it, and yet it did not have the backing of a
11 formal standards body such as the IEEE.
12   MR. PAK: I'll object to this line of
13 questioning as calling for expert testimony.
14   BY MR. WONG: Q. Now, you said that the
15 TCP standard was really a product of ARPANET;
16 correct?
17   A. Correct.
18   Q. What is ARPANET?
19   A. ARPANET was a project from the Defense
20 Department's Advanced Research Projects Agency to
21 build a network for computers that was highly robust
22 and relayed data between computers efficiently.
23   Q. How do you know that, Mr. Li?
24   A. Having worked on it for many, many years
25 and been involved with it as soon as it became

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9 (Pages 30 - 33)

1 available to USC and Rutgers.
2   Q. And by "it," you mean ARPANET?
3   A. ARPANET.
4   Q. You mentioned that TCP was part of an
5 Internet Protocol suite. Is that what you said?
6   A. Correct.
7   Q. Were there any other protocols that were
8 part of the Internet Protocol suite?
9   A. Many.
10   Q. Can you list off for me the protocols that
11 you remember being part of the Internet Protocol
12 suite.
13   A. I'll give you a small set. HTTP; BGP; RIP,
14 R-I-P; DNS; DHCP. I could go on, but Susan's
15 fingers are going to fall off.
16   Q. You mentioned HTTP.
17   Is HTTP an industry standard?
18   A. It is.
19   Q. How do you know that?
20   A. There is an RFC on it. I don't know what
21 its exact standard status is but I believe it's at
22 least proposed standard.
23   Q. And how long has HTTP been an industry
24 standard, to your knowledge?
25   MR. PAK: Calls for expert testimony.

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1   A. IETF.
2   Q. What does HTTP stand for?
3   A. Hypertext Transfer Protocol.
4   Q. You mentioned RIP; correct?
5   A. Correct.
6   Q. What does -- is that -- is that called RIP
7 by the industry?
8   A. Normally pronounced that way, yes.
9   Q. What does RIP stand for?
10   A. Routing Information Protocol.
11   Q. Routing Information Protocol is also part
12 of the Internet Protocol suite you mentioned?
13   A. It is.
14   Q. Is Routing Information Protocol an industry
15 standard?
16   A. Yes, it is.
17   Q. How long has Routing Information Protocol
18 been an industry standard?
19   A. I don't know when the RFC came out.
20   Q. And what is the standard-setting body that
21 manages the RIP protocol?
22   A. IETF.
23   Q. You mentioned DHCP?
24   A. Correct.
25   Q. What does DHCP stand for?

Page 36

1   THE WITNESS: Approximately 1992.
2   BY MR. WONG: Q. And how do you know that,
3 Mr. Li?
4   A. I first used a Web browser about that time,
5 and had some involvement in developing a Web server
6 for the Cisco router.
7   Q. You mentioned BGP?
8   A. Correct.
9   Q. What does BGP stand for?
10   A. Border Gateway Protocol.
11   Q. And BGP was part of the Internet Protocol
12 suite?
13   A. Yes, it was.
14   Q. Was BGP also an industry standard?
15   A. It is.
16   Q. And how do you know that, Mr. Li?
17   A. I helped write the latest RFC on that.
18   Q. How long has BGP been an industry standard,
19 to your knowledge?
20   A. BGP?
21   Q. BGP.
22   A. BGP has been an industry standard since
23 approximately 1993.
24   Q. And what is the standard-setting body that
25 established BGP as an industry standard?

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1   A. Dynamic Host Configuration Protocol.
2   Q. And is DHCP also an industry standard?
3   A. It is.
4   Q. How do you know that, Mr. Li?
5   A. I've read the RFC.
6   Q. What is the standard-setting body that
7 manages DHCP?
8   A. The IETF.
9   Q. How long has DHCP been an industry
10 standard, to your knowledge?
11   A. Since the early '90s.
12   Q. And how do you know that, Mr. Li?
13   A. He read the RFC.
14   Q. Back in the early '90s?
15   A. Yes.
16   Q. Why were you -- strike that.
17   Besides HTTP, BGP, RIP and DHCP, are there
18 any other well-known protocols that are part of the
19 Internet Protocol suite?
20   A. Many.
21   Q. Can you list for me a few more well-known
22 protocols from the Internet Protocol suite?
23   A. Well, the base protocol is IP, Internet
24 Protocol. On top of that we have DNS, the Domain
25 Name System. There's the File Transfer Protocol,

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10 (Pages 34 - 37)

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1 FTP; the Simple Mail Transfer Protocol, SMTP; Post
2 Office Protocol, POP; IMAP which is another mail
3 protocol.
4   Q. And the protocols you just mentioned, are
5 all of them industry standards, to your knowledge?
6   A. They are.
7   Q. What standard-setting body manages the
8 Internet Protocol?
9   A. Internet Engineering Task Force.
10   Q. And what standard-setting body manages the
11 DNS protocol?
12   A. IETF.
13   Q. Is the IETF the standard-setting body for
14 each of the protocols you just mentioned?
15   A. Yes.
16   Q. We just went through several acronyms for
17 different industry standard protocols; correct?
18   A. Yes.
19   Q. Was "HTTP" a well-known term used in the
20 networking industry at the time that you first
21 started working with it?
22   A. No, it was not well-known.
23   Q. When did you start working with HTTP again?
24   A. Very early '90s. Probably '92, '93 time
25 frame.

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1 connection collisions.
2   MR. PAK: At this point I'd like to mark
3 this deposition transcript as confidential
4 information under the protective order.
5   BY MR. WONG: Q. And approximately what
6 time period did you work on this starter project on
7 BGP?
8   A. Approximately 1992.
9   Q. What were you upgrading from BGP Version 2
10 to BGP Version 3?
11   A. So the internal implementation of BGP
12 required a change. The version number required
13 changing.
14   Q. When you say "internal implementation,"
15 what do you mean by that?
16   A. The code that actually performs the
17 functions inside the router.
18   Q. And describe for me generally what is the
19 function of a router?
20   A. Its purpose is to receive packets and
21 decide where they should go and then send them out
22 to the best interface in the network.
23   Q. When you say the word "interface," what do
24 you mean by "interface"?
25   A. That is the connection of the router to

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1   Q. Did HTTP ever become a well-known acronym
2 in the industry?
3   A. Yes. It's very well-known.
4   Q. It's very well-known today?
5   A. Today.
6   Q. Do you approximately when HTTP became a
7 well-known acronym, to your knowledge?
8   MR. PAK: Objection. Calls for expert
9 testimony.
10   THE WITNESS: Approximately 1995.
11   BY MR. WONG: Q. Why do you say 1995,
12 Mr. Li?
13   A. That's when most people started using the
14 Web.
15   Q. Let's go back to your description of
16 responsibilities when you were working at Cisco
17 starting in 1991.
18   The last thing you mentioned was that you
19 started working on a BGP project; correct?
20   A. Correct.
21   Q. Describe for me what that BGP project
22 entailed.
23   A. So my starter project on BGP was to upgrade
24 it from BGP Version 2 to Version 3 of the protocol.
25 This involved adding a small mechanism for resolving

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1 another router via a link of some flavor.
2 Communications channel.
3   Q. Was "router" a commonly used term at the
4 time that you were working on this BGP project for
5 Cisco?
6   A. It was. It's also known as a gateway in
7 some circumstances.
8   Q. Were there any particular routers that your
9 project applied to?
10   A. In particular it applied to the Cisco AGS
11 Plus and the remainder of Cisco's product line at
12 the time.
13   Q. After you worked on this BGP project, what
14 else did you do at Cisco?
15   A. I've worked on many different things. The
16 silicon switch engine, various other routing
17 protocol maintenance tasks, the router called GSR.
18   Q. And just to be clear, Mr. Li, are we
19 talking about the time period where you first
20 started working at Cisco in 1991?
21   A. That was just the '91 through '96 time
22 frame.
23   Q. Now, you mentioned performing various other
24 routing protocol maintenance tasks.
25   What other routing protocols did you work

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11 (Pages 38 - 41)

1 with during this 1991 through 1996 time period at

2 Cisco?

3   A. Everything else in the IP protocol suite

4 within Cisco. This includes RIP, IGRP, EIGRP, EGP,

5 OSPF, IS-IS. I also had my hands in some of the

6 CLNS stack.

7   Q. What is OSPF?

8   A. Open Shortest Path First routing protocol

9 from the IETF.

10   THE REPORTER: Would you mind repeating

11 that. I'm sorry.

12   THE WITNESS: Open Shortest Path First

13 routing protocol from the IETF.

14   THE REPORTER: Thank you.

15   BY MR. WONG: Q. And the RIP and the IGRP

16 you just mentioned, those are the same RIP and IGRP

17 you were discussing earlier today; correct?

18   A. Yes.

19   Q. You mentioned IS-IS.

20   What is IS-IS?

21   A. This is another routing protocol that comes

22 from the ISO protocol stack and the OSI standards

23 body. It supports routing for both CLNP and IP.

24   Q. What is CLNP?

25   A. Connectionless Network Protocol.

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1   Q. And is that protocol also an industry

2 standard?

3   A. It is.

4   Q. What is the standard-setting body that

5 manages CLNP?

6   A. ISO.

7   Q. What is ISO?

8   A. International Standards Organization.

9 Although that's more formally it's -- the official

10 name is in French, so . . .

11   Q. When you were talking about IS-IS, you

12 mentioned the OSI standards body.

13   Do you remember that?

14   A. That's correct.

15   Q. What is the OSI standards body?

16   A. Open systems -- I don't remember the full

17 expansion. Sorry.

18   Q. Okay. So who was the standard-setting body

19 for IS-IS?

20   A. I believe that was -- falls under ISO which

21 is the child of OSI.

22   Q. And how do you know that, Mr. Li?

23   A. I've read the document.

24   Q. When you say "the document," do you mean

25 the --

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1   A. The standard -- the standard for IS-IS.

2   MR. PAK: Ryan, when you get a chance, can

3 we take a break? We've been going for about an

4 hour.

5   MR. WONG: Sure. We can take a break now.

6   THE WITNESS: Thank you.

7   THE VIDEOGRAPHER: Going off the record.

8 The time is 10:05.

9   (Recess taken from 10:05 a m. to

10 10:11 a.m.)

11   THE VIDEOGRAPHER: We're back on the

12 record. The time is 10:11.

13   BY MR. WONG: Q. Mr. Li, you used the

14 acronym BGP to refer to the Border Gateway Protocol;

15 correct?

16   A. Correct.

17   Q. Is BGP a commonly known acronym for Border

18 Gateway Protocol?

19   A. No, not common.

20   Q. Okay. Is it a -- strike that.

21   Why do you use the term "BGP" to refer to

22 the Border Gateway Protocol?

23   A. So that's the acronym that is used within

24 the industry.

25   Q. When you say that's the acronym that's used

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1 within the industry, you're referring to the BGP

2 acronym; correct?

3   A. Correct.

4   Q. And when you say "the industry," what do

5 you mean by "the industry"?

6   A. Computer network.

7   Q. And how long as BGP been used as an acronym

8 within the computer networking industry, to your

9 knowledge?

10   A. Since BGP was first introduced, which I

11 believe was approximately 1989.

12   Q. Okay. And why do you use the term "RIP" or

13 R-I-P to refer to Router Information Protocol?

14   A. That is the common acronym used for that

15 protocol.

16   Q. In the networking industry?

17   A. In the networking industry.

18   Q. And how long has RIP been a commonly used

19 acronym in the networking industry?

20   A. I don't know.

21   MR. PAK: Objection. Calls for expert

22 testimony.

23   BY MR. WONG: Q. Okay. But to your

24 knowledge, it is a commonly used acronym in the

25 networking industry today?

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12 (Pages 42 - 45)

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1   A. It is.
2   Q. Do you know when you first started using
3 the acronym RIP?
4   A. 1991 when I came to Cisco.
5   Q. And did you come up with the acronym RIP?
6   A. No, I did not.
7   Q. Where did you get that acronym from?
8   A. I heard it from coworkers first.
9   Q. And you did not come with the acronym BGP;
10 correct?
11   A. Correct.
12   Q. Where did you first hear the acronym BGP?
13   A. From discussions on a Usenet mailing list.
14   Q. What is a Usenet mailing list?
15   A. Usenet was a system for exchanging
16 messaging in a broadcast fashion, and there were
17 groups within that where people would circulate
18 messages. And so there was a discussion of routing
19 protocols, and I heard about it first through that.
20   Q. And what time period are you talking about
21 here when you first heard the acronym BGP?
22   A. This would be somewhere between about 1985
23 to 1990.
24   Q. So that was before you started working at
25 Cisco; correct?

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1 working for Cisco in 1991?
2   A. Approximately three.
3   Q. What was your familiarity with the command
4 line interface on Cisco's routers before you started
5 working at Cisco in 1991?
6   A. So I used Cisco's CLI for those three years
7 between '87 and 1991.
8   Q. What level of familiarity -- strike that.
9   Was OSPF a well-known acronym in the
10 networking industry? Actually, strike that.
11   Is OSPF a well-known acronym in the
12 networking industry?
13   A. Yes, it is very well-known.
14   Q. And when did you first hear of the acronym
15 OSPF, Mr. Li?
16   A. As part of my employment at Cisco.
17   Q. Approximately when did you hear -- first
18 hear of OSPF?
19   A. About 1992.
20   Q. Approximately how long has "OSPF" been a
21 well-known term in the networking industry, to your
22 knowledge?
23   MR. PAK: Objection. Calls for expert
24 testimony.
25   THE WITNESS: I suspect at least 1989.

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1   A. Correct.
2   Q. Is "IGRP" also a commonly used term in the
3 networking industry?
4   A. It is.
5   Q. And how long, to your knowledge, has "IGRP"
6 been a commonly used term in the networking
7 industry?
8   MR. PAK: Objection. Calls for expert
9 testimony.
10   THE WITNESS: I recall seeing it very early
11 on. I first learned about it in 1987.
12   BY MR. WONG: Q. And you did not come up
13 with the acronym IGRP; right?
14   A. No, I did not.
15   Q. Do you recall how you first learned about
16 the acronym IGRP?
17   A. So I was asked to administer a Cisco router
18 in 1987 and was -- did Cisco training and learned
19 about IGRP through that training.
20   Q. And that was before you joined Cisco in
21 1991; right?
22   A. That's correct. I was a customer before an
23 employee.
24   Q. How many years of experience did you have
25 working with Cisco routers before you started

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1   BY MR. WONG: Q. Why do you say that,
2 Mr. Li?
3   A. So there's work started on OSPF early on
4 prior to my joining Cisco and prior to my learning
5 about it, and I believe that was about '89.
6   Q. When you say there was work started on
7 OSPF, what are you referring to by that?
8   A. This is work in the IETF to specify the
9 protocol.
10   Q. And how did you know that there was work
11 started on OSPF by the IETF around 1989?
12   A. So there was a discussion list about it,
13 and I looked at some the history of OSPF and looked
14 at the RFC that subsequently came out. I knew that
15 folks had been working on it for quite some time.
16   Q. Who was participating in the discussion
17 list about OSPF at that 1989 time period?
18   A. I --
19   MR. PAK: Objection. Calls for
20 speculation.
21   THE WITNESS: So John Moy, Milo Medin,
22 Vince Fuller, Cathy Wittbrodt. Don't remember the
23 rest.
24   BY MR. WONG: Q. And how do you know those
25 individuals you just named were part of the

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13 (Pages 46 - 49)

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1 discussion of OSPF in 1989?
2   A. I subsequently worked with them as part of
3 IETF and learned of their involvement with OSPF.
4   Q. You worked -- strike that.
5   When did you work with those individuals as
6 part of the IETF?
7   A. I started working with them in 1991.
8   Q. What companies, if you recall, did those
9 individuals work for?
10   A. John Moy represented Proteon. Milo Medin
11 worked for NASA. Cathy Wittbrodt was at
12 Energy Sciences Network at -- as part of
13 Lawrence Livermore Labs.
14   Q. Did any other vendors -- strike that.
15   Did any other companies or organizations
16 besides the ones you just mentioned participate in
17 OSPF standardization?
18   MR. PAK: Objection. Calls for
19 speculation. Calls for expert testimony.
20   THE WITNESS: So I'm certain that several
21 others did. The best way to check would be to look
22 at the IETF attendance records.
23   BY MR. WONG: Q. When you say you're
24 certain that several others did, why are you so
25 certain?

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1 standard?
2   A. Not offhand.
3   Q. Is IS-IS a well-known acronym in the
4 networking industry?
5   A. Largely, no.
6   Q. How do you know the IS-IS acronym?
7   A. I'm part of a small group who've made use
8 of the protocol.
9   Q. Is IS-IS a well-known acronym amongst those
10 who make use of the IS-IS protocol?
11   A. Yes, it is.
12   Q. Why is it a smaller group that makes use of
13 the IS-IS protocol?
14   A. So IS-IS is part of the ISO protocol stack
15 which ended up not having a significant market
16 share, and thus there's a very small user base.
17 Only a very small portion of the I net -- IP
18 networking industry ended up using IS-IS, and so the
19 number of people that use IS-IS for IP routing is
20 very, very small.
21   Q. How long has IS-IS been a well-known
22 acronym amongst those who make use of the IS-IS
23 protocol, to your knowledge?
24   A. At least 1991.
25   Q. And when did -- when did you first hear of

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1   A. The IETF typically has dozens of people
2 operating, working together on any given protocol.
3   Q. And how do you -- how do you know that,
4 Mr. Li?
5   A. So that's -- I started participating in the
6 IETF in 1991, and that's their standard way of
7 working.
8   Q. How many years have you been participating
9 in the IETF since 1991?
10   A. I participated quite consistently up and
11 through about -- from 1991 to about 1999, and then
12 it's been sporadic since then.
13   Q. When you say the IETF typically has dozens
14 of people working together on any given protocol,
15 are those people from the same company or different
16 companies?
17   MR. PAK: Objection. Calls for
18 speculation. Vague.
19   THE WITNESS: Typically the group --
20 working groups that are working on a protocol draw
21 people from all sorts of different companies and
22 organizations.
23   BY MR. WONG: Q. Can you think of any
24 protocols from the IETF where different
25 organizations did not participate in creating the

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1 the IS-IS acronym?
2   A. 1991 when I joined Cisco.
3   Q. Is "IP" a well-known industry term in the
4 networking industry?
5   A. Very well.
6   Q. In your view, what other acronyms are as
7 well-known as IP in the networking industry?
8   MR. PAK: Objection. Calls for expert
9 testimony.
10   THE WITNESS: TCP, TCP/IP, WWW.
11   BY MR. WONG: Q. How long has IP been a
12 well-known acronym in the networking industry?
13   A. At least since 1983.
14   Q. And when did you first learn of the acronym
15 IP?
16   A. Approximately 1984 I took a class in
17 computer networking and read the -- first read the
18 RFCs on IP.
19   Q. Is BGP a -- let me start that again.
20   Is "BGP" a well-known term in the
21 networking industry?
22   A. It is.
23   Q. How long has "BGP" been a well-known term
24 in the networking industry?
25   MR. PAK: Objection. Calls for expert

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14 (Pages 50 - 53)

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1 testimony.
2   THE WITNESS: Probably since about 1993.
3   BY MR. WONG: Q. And why do you say that
4 "BGP" has been a well-known term in the networking
5 industry since 1993?
6   A. I'm an expert in BGP.
7   Q. Why do you say that you are an expert in
8 BGP?
9   A. I helped deploy BGP throughout the
10 Internet.
11   Q. What did you do to help deploy BGP
12 throughout the Internet?
13   A. So I was responsible for maintaining and
14 enhancing BGP. I was responsible for doing a great
15 deal of bug fixing to BGP. And as part of that, I
16 ended up reimplementing much of Cisco's BGP code and
17 replacing the vast majority of the code that they
18 had.
19   Q. And when did you first hear of the acronym
20 BGP?
21   A. Again, I believe it was in the late '80s as
22 part of the Usenet group.
23   Q. Is "DNS" a well-known term in the
24 networking industry?
25   A. It is.

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1   Q. How long has "DNS" been a well-known term
2 in the networking industry, Mr. Li?
3   A. At least since late '80s.
4   Q. When did you first learn of the term "DNS"?
5   A. I was a sys admin at USC at the time.
6 Could have been anywhere from '83 on.
7   Q. How do you know that "DNS" has been a
8 well-known term in the networking industry since the
9 late 1980s?
10   A. So I would helped convert USC from using
11 host.text, which was previous system, to using DNS.
12   Q. Is "DHCP" a well-known term in the
13 networking industry?
14   A. It is.
15   Q. How long has "DHCP" been a well-known term
16 in the networking industry?
17   A. I don't know.
18   Q. When did you first hear of the acronym
19 DHCP?
20   A. Probably 1991.
21   Q. Why do you think you first heard of DHCP in
22 1991?
23   A. I helped maintain DHCP relay functionality
24 in Cisco IOS.
25   Q. What did that -- strike that.

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1   What did that entail, maintaining DHCP
2 relay functionality in Cisco IOS?
3   A. Means that I had to look at the source
4 code, read the DHCP RFC, test the behavior of the
5 Cisco DHCP relay and then repair the functionality
6 in the source code as necessary.
7   Q. At some point, Mr. Li, you left Cisco's
8 employment; correct?
9   A. Several times.
10   Q. When you started at Cisco in 1991, when did
11 you leave?
12   A. I believe it was 1996.
13   Q. What did you do after you left Cisco in
14 1996?
15   A. After a while I joined Juniper Networks.
16   Q. And what was Juniper's business at the
17 time?
18   A. Juniper was a startup in the computer
19 networking space.
20   Q. What was Juniper's main product at the
21 time?
22   A. They had no product initially, and their
23 first product was a router, the M40, and I believe
24 that came out in 1998.
25   Q. Did you work on the M40 Juniper router?

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1   A. I did.
2   Q. Now, you said Juniper had no product
3 initially.
4   Did they have no product when you joined
5 them in 1996?
6   A. That's correct. We were a startup. We
7 had -- I was Employee No. 5. We had an office, and
8 that was it.
9   Q. Who were Juniper's competitors?
10   A. At the time it was Cisco. I believe Pluris
11 came along shortly thereafter, but I don't know
12 exactly when. There was another company called
13 NetStar. Wellfleet. Proteon had not quite gone
14 under.
15   That's all I can remember.
16   Q. Now, you said you were Employee No. 5;
17 correct?
18   A. Correct.
19   Q. Where did the other first employees at
20 Juniper come from?
21   A. So the founder Pradeep Sindhu was coming
22 out of Xerox PARC and Sun. Bjorn Liencres I believe
23 was Sun. Dennis Ferguson, I knew him through IETF,
24 and he was at -- running CAnet, although I don't
25 know who he was affiliated with.

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15 (Pages 54 - 57)

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1 tried to sell?
2   A. There were two products, 8812 and 8801.
3 Both of these were high-end Internet routers.
4   Q. When you say "high-end Internet routers,"
5 what do you mean by that?
6   A. These are routers that had high bandwidth.
7 The 8801 was a 40-gigabit router, 8812 was a
8 480-gigabit router, and both of these spoke Internet
9 Protocol only.
10   Q. You say both of these spoke Internet
11 Protocol only.
12   You're referring -- does Internet Protocol
13 mean IP?
14   A. Yes, it does.
15   Q. What other protocols -- strike that.
16   Are there any other protocols that a router
17 could speak besides IP?
18   A. There are many.
19   Q. Can you give me two or three examples of
20 protocols that a router could speak besides IP?
21   A. DECnet, IPX, Xms, Apollo.
22   Q. Who were Procket's competitors?
23   A. Primarily Cisco and Juniper.
24   Q. And why do you say that?
25   A. They had the overwhelming majority of

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1   Q. I'm sorry. Did you say 1984?
2   A. 2004. Excuse me.
3   Q. How do you know that, Mr. Li?
4   A. So as founder and stockholder in the
5 company, I was involved in the legal proceedings.
6   Q. So you were a founder of Procket Networks,
7 Mr. Li?
8   A. I was.
9   Q. Were there multiple founders of
10 Procket Networks?
11   A. There were three. The other two are
12 Bill Lynch and Sharad Mehrotra.
13   Q. How did you decide to create
14 Procket Networks, Mr. Li?
15   A. So I was introduced to Procket Networks by
16 Stuart Phillips who had been my boss at Cisco, and
17 he introduced me to these two gentlemen who were
18 working on a network processor at the time.
19   Once we started discussing their business
20 venture of building a network processor, it became
21 very apparent that they were going to have to build
22 a demo system to demonstrate how to implement their
23 network processor. And from there it seemed like it
24 would be very, very simple to make a small change
25 and build a full router out of it.

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1 market share at the time.
2   Q. Market share in high-end Internet routers?
3   A. Yes.
4   Q. And what were the competing Juniper
5 products to the Procket Networks product?
6   A. The M160 was the Juniper product, and the
7 Cisco product was the GSR and later the CRS.
8   Q. You said the GSR; is that correct?
9   A. That's correct.
10   Q. Does GSR stand for anything?
11   A. Yes, but I don't remember exactly what.
12 Gateway switch router, but . . .
13   Q. And correct me if I'm wrong, did you work
14 on the GSR when you worked at Cisco between 1991 and
15 1996?
16   A. Yes, I did. I helped with the initial
17 design phases.
18   Q. Is Procket Networks still in business?
19   A. No, it is not.
20   Q. What happened to Procket Networks?
21   A. It was acquired by Cisco in 2004. Strike
22 that. Let me be more specific.
23   The intellectual property and the majority
24 of the assets were acquired by Cisco in 1984. The
25 company itself was put in the receivership.

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1   Q. So building a full router was not the
2 initial idea for Procket Networks; is that right?
3   A. No, it was not.
4   Q. You mentioned Stuart Phillips?
5   A. That's correct.
6   Q. And you said that Mr. Phillips had been
7 your boss at Cisco; correct?
8   A. Correct.
9   Q. And that was during the 1991 to 1996 time
10 period?
11   A. At the end of it, yes.
12   Q. Was Mr. Phillips still at Cisco when --
13   A. No, he was not. He was a venture
14 capitalist at U.S. Venture Partners.
15   Q. Was Mr. Phillips one of the founders of
16 Procket Networks?
17   A. No, he was not.
18   Q. Was Mr. Phillips -- what was Mr. Phillips'
19 involvement ine Procket Networks?
20   A. So he was the representative from USVP who
21 was trying to fund and encourage Procket to grow.
22   Q. And did USVP fund Procket Networks?
23   A. It did.
24   Q. Did Mr. Phillips have any -- strike that.
25   What was Mr. Phillips' involvement in the

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17 (Pages 62 - 65)

1 you would automatically set up all of the VPN
2 connectivity.
3   Q. What did you do after you consulted for
4 Verio?
5   A. I'm not certain, but I believe that was --
6 then I went back to Cisco at that point.
7   Q. And approximately when -- and feel free,
8 Mr. Li, to look at Exhibit 136.
9   A. Thank you.
10   Q. When did you return to Cisco for your
11 second stint?
12   A. So it was fall of 2004.
13   Q. And what did you do at Cisco when you
14 returned in 2004?
15   A. So I joined the group working on IOS XR and
16 specifically helped on the BGP protocol.
17   Q. What is IOS XR?
18   A. This was a rewrite of Cisco's IOS operating
19 system in an attempt to do so in a modular fashion.
20   Q. And you specifically helped on the BGP
21 protocol.
22   Is that BGP the same BGP we've been talking
23 about today?
24   A. It was.
25   Q. What type of help did you provide with

1 respect to the BGP protocol for IOS XR?
2   A. So my first task was to help with some of
3 the locking features inside of BGP. There were
4 numerous performance problems that the
5 implementation had, and I was improving performance
6 by converting some of the locking primitives to
7 faster mechanisms.
8   Q. How did you come to return to Cisco in
9 2004?
10   A. I was interested in working with my friends
11 again.
12   Q. So did you approach Cisco for the position?
13   A. I did.
14   Q. And how long did you work at Cisco for that
15 second period of time?
16   A. So approximately a year.
17   Q. And what did you do after that?
18   A. Then I left to join another network,
19 another company called Portola Networks that I
20 started with my friend Vito Palermo.
21   Q. How long were you at Portola?
22   A. Only a few months. We attempted to get
23 funding. We did not. I decided to move on.
24   Q. What did you do after you left
25 Portola Networks?

1   A. I joined another networking firm called
2 Tropos Networks. Worked in the WiFi mesh arena.
3   Q. How long were you at Tropos Networks?
4   A. About nine months.
5   Q. Okay. Why did you leave Tropos?
6   A. I did not find the environment acceptable.
7   Q. And what did you do after you left --
8 strike that.
9   When did you leave Tropos Networks?
10   A. So I returned to Cisco, I believe, in 2008.
11   Q. And how did you come to return to Cisco for
12 your third time working there?
13   A. Correction. That was 2006. And that
14 was -- I returned there to help with working on a
15 compiler for a network processor that Cisco was
16 building.
17   Q. And did you reach out to Cisco to work on
18 that project?
19   A. I did. I talked to Bill Lynch, who is my
20 supervisor, and reported to him.
21   Q. And how long did you work at Cisco for this
22 third period of time?
23   A. About one year.
24   Q. Can you describe for me what your work
25 involved on the compiler for the network processor.

1   A. So the network processor we were developing
2 was an offshoot and derivative from -- of the
3 technology used at Procket for forwarding packets.
4 At Procket we were hand-coding this in machine code
5 with the assistance of some macros, but this was not
6 very productive.
7   We observed that we could be more
8 productive if we had a higher-level language to work
9 in. I had some are experience in programming
10 languages, so I set out to prototype the C compiler
11 that actually worked for this network processor.
12   And this is challenging because the
13 architecture of the network processor is
14 substantially unlike a standard computer.
15   Q. You said it was an offshoot from the
16 technology at Procket Networks?
17   A. Yes.
18   Q. How was it an offshoot from the technology
19 from Procket?
20   A. So at Procket we had pioneered use of the
21 systolic array of processors. This is a set of
22 cores, CPU -- small CPUs inside of the chip, and the
23 cores are arranged linearly, logically, and
24 processing happens by passing context from one core
25 to the next in a fully synchronous fashion.

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1   Q. What was your involvement in -- strike
2 that.
3   What is Exhibit 139?
4   A. It appears to be a copy of RFC 1887.
5   Q. What was your involvement in RFC 1887,
6 Mr. Li?
7   A. So Yakov and I coauthored or coedited this
8 document in an attempt to document a routing
9 protocol architecture -- a routing architecture for
10 IPv6.
11   Q. What is IPv6?
12   A. That is the next version of the Internet
13 Protocol. What a widely deployed right now today is
14 known as IPv4. It has the problem that it does not
15 have enough address space and can only support about
16 4 billion hosts.
17   IPv6 is a -- the next version that has been
18 approved by the IETF and we're currently
19 transitioning to IPv6, slowly.
20   Q. We're currently transitioning today, you
21 mean?
22   A. Yes. Twenty years and counting.
23   Q. And I'm sorry. What was the date on the
24 document marked as Exhibit 138, Mr. Li?
25   A. That appears to be March 1995.

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1 acronym was designated by the IETF.
2   Q. What do you mean, "this acronym was
3 designated by the IETF"?
4   A. So the IETF, in selecting this protocol to
5 migrate to, decided that we should all refer to
6 version 6 of the protocol as IPv6.
7   Q. And how do you know that the IETF decided
8 that we all should refer to version 6 of the IP
9 protocol as IPv6?
10   A. I was there as part of the discussion.
11   Q. What vendors were part of that discussion?
12   A. I'm sorry. I don't recall.
13   Q. Were there more than one vendor part of
14 that discussion?
15   A. Yes, many.
16   Q. Do you recall if Cisco was part of that
17 discussion?
18   A. I believe so.
19   Q. Do you recall if Juniper was part of that
20 discussion?
21   A. I believe so.
22   Q. Were there any other acronyms relating to
23 routing protocols that the IETF decided should be
24 used to refer to those protocols?
25   A. Yes, many.

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1   Q. Was this document -- strike that.
2   When was the first version of the document
3 marked as 138 completed, to your knowledge?
4   A. I would have to check my notes to be
5 precise but somewhere approximately 1994.
6   Q. Turning back to Exhibit 139, Mr. Li, what
7 is the date on this document?
8   A. December 1995.
9   Q. Is that the publication date for this RFC?
10   A. Yes, it is.
11   Q. And was the document that is shown
12 Exhibit 139, was that completed before the
13 publication date shown on Exhibit 139?
14   A. Yes, it was.
15   Q. Do you know approximately when?
16   A. Somewhere between '93 and '94.
17   Q. Did you come up with the term "IPv6,"
18 Mr. Li?
19   A. No, I did not.
20   Q. Do you know who?
21   A. No. Can't be specific.
22   Q. Is IPv6 a well-known acronym in the
23 networking industry?
24   A. Yes, it is. It is a well-known acronym for
25 Internet Protocol version 6, and this -- this

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1   Q. What protocols did the IETF decide that
2 everyone in the network industry should use in
3 addition to IPv6?
4   MR. PAK: Objection. Calls for expert
5 testimony.
6   THE WITNESS: So OSPF, BGP, RSVP, LDP,
7 HTTP.
8   BY MR. WONG: Q. Was "IS-IS" a -- a
9 term -- strike that.
10   Did the IETF have any role in the decision
11 for IS-IS to be used by the networking industry?
12   A. Somewhat. Again, IS-IS was originally
13 standardized outside of the IETF. The IETF had the
14 responsibility of managing the usage of IS-IS for
15 Internet Protocol routing.
16   Q. And to your knowledge, Mr. Li, based on
17 your experience working in the industry, did various
18 vendors use those acronyms that you just listed out
19 for me?
20   A. Yes, frequently.
21   Q. To what extent was there any belief that
22 these acronyms for routing protocols were
23 proprietary to any single vendor?
24   MR. PAK: Objection. Calls for
25 speculation.

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28 (Pages 106 - 109)

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1   THE WITNESS: So the acronyms were never
2 proprietary.
3   BY MR. WONG: Q. And on what facts do you
4 base that opinion, Mr. Li?
5   A. So the acronyms were never published with a
6 trademark or copyright notice attached to them.
7   Q. Did you ever believe personally that the
8 use of OSPF, BGP, IP or any of the other acronyms
9 that we've been discussing today were proprietary to
10 any vendor?
11   A. No.
12   Q. In your experience at multiple companies in
13 the networking industry, did anybody else that you
14 worked with express the belief to you that any of
15 these acronyms were proprietary to any vendor?
16   A. No.
17   Q. So in the 25 years that you have been
18 working in the networking industry, you have not
19 heard anybody express the belief that any of these
20 acronyms were proprietary to a single vendor?
21   A. That's correct.
22   Q. Turning back to Exhibit 139, Mr. Li, first
23 page further down, second paragraph from the bottom,
24 the word "domain" is used.
25   Do you see that?

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1   A. Yes.
2   Q. Did you come up with the word "domain"?
3   A. No, I did not.
4   Q. Do you know who did?
5   A. I believe that was Dr. Rechter.
6   Q. Do you know when Dr. Rechter came up with
7 the name "domain"?
8   A. I believe that he came up with that term
9 during the work for IDRP, and that flowed -- and it
10 is semantically equivalent to Autonomous System, and
11 it flowed from his work in IDRP into both this
12 document and the BGP specification.
13   Q. And how do you -- how do you know that,
14 Mr. Li?
15   A. Direct work with both of those
16 specifications.
17   Q. Okay. By the time of this RFC,
18 December 1995, was "domain" a well-known industry
19 term?
20   MR. PAK: Objection. Vague.
21   THE WITNESS: No, it was not well-known and
22 still is not very well-known.
23   MR. WONG: Let's mark this one as 140,
24 please.
25   (Exhibit 140 was marked for identification

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1 by the court reporter and is attached hereto.)
2   BY MR. WONG: Q. The court reporter has
3 marked as Exhibit 140 a document bearing Control
4 Nos. ARISTANDCA00025927 to -25933.
5   Mr. Li, have you seen this document before?
6   A. I believe so.
7   Q. What is the document marked as Exhibit 140?
8   A. It appears to be a copy of RFC 1966, BGP
9 Route Reflection.
10   Q. Did you -- what was your involvement, if
11 any, in the creation of the document marked as
12 Exhibit 140?
13   A. So I helped discuss many of the concepts in
14 this document. As part of the development and
15 deployment of BGP, we found that we had numerous
16 scalability issues that we needed to overcome.
17 There were several approaches proposed. I helped
18 work on the Route Reflection proposal.
19   Some of the original work was proposed by
20 Dimitry Haskin of Bay Networks. And as part of the
21 IDR working group, we jointly discussed and came up
22 with this proposal.
23   Mr. Bates and Mr. Chandra eventually wrote
24 up the actual document as you see it here.
25   Q. What is BGP Route Reflection?

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1   A. BGP Route Reflection is a mechanism for
2 taking routing information and reflecting it from
3 one router to another through a third router. This
4 allows for better scalability because it fixes the
5 problem where BGP previously had where all BGP
6 routers within a particular AS had to be directly
7 interconnected. That led to some significant
8 computational and configuration management
9 challenges.
10   Q. Who came up with the phrase "Route
11 Reflection"?
12   A. I believe, but I'm not certain, that that
13 would be Mr. Haskin.
14   Q. And Mr. Haskin, to your recollection,
15 worked for Bay Networks?
16   A. It may have been Wellfleet at the time.
17   Q. And just by implication from your answer,
18 was Wellfleet acquired by Bay Networks?
19   A. Bay and -- I'm sorry.
20   Yes. Bay -- Bay was the merger of Synoptix
21 and Wellfleet, and I believe he was on the Wellfleet
22 side.
23   Q. And why do you think that Mr. Haskin came
24 up with the phrase "Route Reflection"?
25   A. So I believe he was the first one at IDR

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29 (Pages 110 - 113)

1 know that, Mr. Li?
2   A. That was policy of the IETF and has been
3 well-recited many times within the IETF.
4   Q. Mr. Li, do you know what the parser police
5 is?
6   A. I believe you're referring to a mailing
7 list within Cisco.
8   Q. What is your understanding of the parser
9 police?
10   A. So this was a group of people who were
11 selected to review, pass judgment and comment on
12 changes to the CLI.
13   Q. Were you a member of the parser police,
14 Mr. Li?
15   A. I believe I was the original instigator of
16 the parser police and was certainly a proactive
17 member of it.
18   Q. And what time period were you a member of
19 the parser police, approximately?
20   A. From the time it was founded in the early
21 '90s.
22   Q. What was the purpose of the parser police?
23   A. So Cisco's engineering culture did not
24 provide for any mechanism for ensuring any kind of
25 consistency of the implementation of the CLI. The

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1 parser police was a response to that need to try to
2 get people organized and try to ensure that other
3 engineers had a process whereby they could submit
4 work for review and get comments back and help us
5 create a much more standardized CLI.
6   Q. What do you mean by "standardized CLI"?
7   A. So it will be helpful to the customer if
8 the CLI operated the same or largely the same way
9 throughout the product. Without this, we ended up
10 with a -- different CLI commands that did radically
11 different things yet said the same thing to the
12 customer base, or worse, two functions that had to
13 be performed that did largely the same thing and yet
14 their CLI syntax was widely different.
15   Q. Why is it helpful to the customer if the
16 CLI operates in the same or largely the same way
17 throughout the product?
18   A. Again, it is useful for giving consistency
19 which simplifies the user's experience.
20   Q. Besides consistency to the customer, were
21 there any other goals that the parser police had for
22 the Cisco command line interface?
23   A. We would try to achieve what we called
24 principle of least surprise. We would try to give a
25 design that a user would expect. Frequently we were

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1 extending the CLI past where it had previously been.
2 We wanted to extend it in a way that was largely
3 consistent with prior work.
4   Q. What would you do to try to achieve what
5 you call the principle of least surprise?
6   A. So we would change the syntax or the
7 semantics of commands to the CLI -- and this
8 includes configure commands -- to match previous
9 semantics.
10   Q. When you say "previous semantics," what do
11 you -- what do you mean by "previous semantics"?
12   A. So matching the syntax and the meaning of
13 previous commands already in the system.
14   Q. Besides changing the syntax to match
15 previous semantics, is there anything else that the
16 parser police would try to do to achieve the
17 principle of least surprise to the customer?
18   A. Not that I can think of.
19   MR. WONG: Why don't we take our lunch
20 break.
21   THE WITNESS: Okay.
22   THE VIDEOGRAPHER: Going off the record.
23 The time is 12:19.
24   (Luncheon recess taken from 12:19 p m. to
25 1:05 p m.)

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1   A F T E R N O O N   P R O C E E D I N G S :
2
3   THE VIDEOGRAPHER: We are back on the
4 record. The time is 1:05.
5   BY MR. WONG: Q. Mr. Li, before -- before
6 the break when you were talking about your time at
7 USC, you mentioned that you did some Cisco training?
8   A. Yes, I did.
9   Q. Do you recall if Cisco paid for that
10 training?
11   A. I don't know who paid for it. It was
12 either Cisco or another regional network known as
13 Surfnet or the other regional network known as
14 Los Gatos.
15   Q. Now, we were talking about the parser
16 police before the break.
17   To what extent, if at all, was the use of
18 industry-standard terminology encouraged in Cisco's
19 command sets?
20   MR. PAK: Objection. Vague.
21   THE WITNESS: So the use of
22 industry-standard terminology was encouraged largely
23 by the engineering community of which much of
24 Cisco's development was driven by simply because it
25 minimized confusion. It was discouraged by the

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33 (Pages 126 - 129)

1 marketing team who, as far as I could tell, wanted
2 to encourage confusion.
3   BY MR. WONG: Q. And why do you say that
4 the marketing team wanted to encourage confusion?
5   A. They seem today prefer to introduce their
6 own new terminology.
7   Q. And on what facts are you basing your
8 testimony that the use of industry-standard
9 terminology was encouraged by the engineering
10 community?
11   A. So again, the principle of least surprise
12 meant that, when we could used a standardized term,
13 we probably should because that's what the customer
14 base would be expecting.
15   Q. And did you encourage the use of
16 standardized terms when you were on the parser
17 police?
18   A. As much as possible.
19   Q. To what extent, if at all, did you work
20 with other vendors to come up with any of the
21 commands used in Cisco IOS?
22   A. We did not work with other vendors for
23 that.
24   Q. Have you -- strike that.
25   During your time working at Cisco, had you

1 directly with Cisco customers?
2   A. So there was a mailing list, cs@cisco.com.
3 This was gatewayed into the mailboxes of various
4 engineers. I caught a lot of the IP routing
5 questions, and so I ended up having e-mail exchanges
6 with customers.
7   We frequently also had training classes,
8 and there was an interaction between customers and
9 engineers every Wednesday afternoon. We had --
10 would have a little party/reception for the
11 customers which was fondly known as beer and
12 cookies, and we would sit and hang out and toss
13 things around.
14   I was also sometimes called upon into sales
15 calls to have discussions with customers directly.
16   Q. Is it from that experience that you are
17 aware of networking errors occurring as a result of
18 customers being unfamiliar with Cisco's CLI command
19 sets?
20   A. Yes.
21   Q. You mentioned training classes in your
22 prior answer.
23   Can you expand upon the type of training
24 classes that you participated in while at Cisco.
25   A. So the only one I actually participated in

1 ever heard of network errors occurring as a result
2 of a user's unfamiliarity with Cisco's CLI?
3   MR. PAK: Objection.
4   THE WITNESS: Yes. It was very common for
5 users to have configuration errors, and that
6 resulted in network problems.
7   BY MR. WONG: Q. And what was the cause of
8 those configuration errors that you're talking
9 about?
10   A. Could have been anything. Unfamiliarity
11 with the command, unfamiliarity with the concepts,
12 simple typos.
13   Q. And how do you know that configuration
14 errors were caused by unfamiliarity with commands?
15   A. So we would quickly get e-mail from
16 customers requesting help with particular
17 situations, and it was very obvious that the
18 customer was trying to do one thing, had attempted
19 to configure the router in one way and had done
20 something that did not cause what they were trying
21 to do.
22   Q. And did you have communications with
23 customers while you were working at Cisco?
24   A. Frequently.
25   Q. In what context did you have interactions

1 was while I was a customer only, and that was
2 several days -- I think two days -- and we basically
3 went through at the time the entire Cisco command
4 set as part of training exercise.
5   Q. And that participation as a customer, when
6 did that happen?
7   A. About 1987.
8   Q. And is that training how you became
9 familiar with the Cisco IOS command line interface?
10   A. That and reading the manual.
11   Q. Who paid for training that you took in the
12 1987 time period?
13   A. Again, I'm not certain who paid for it. It
14 was one of Cisco, Surfnet, Los Altos -- Los Nettos
15 or USC.
16   Q. Were you aware from your time working at
17 Cisco of network errors occurring because of
18 confusion over CLI commands?
19   A. Frequently.
20   Q. And is that also from your direct
21 interaction with Cisco customers?
22   A. It was from my direct interaction with
23 Cisco customers and certainly my own usage of
24 Cisco's command line. I certainly made a handful of
25 mistakes.

34 (Pages 130 - 133)

1   BY MR. WONG: Q. You also worked at
2 Juniper; correct?
3   A. Yes, I did.
4   Q. What were the similarities or differences
5 between how Juniper would provide training to its
6 customers' engineers on how to use Juniper's command
7 line interface as compared to Cisco's approach?
8   A. I was less involved in Juniper, but I
9 believe that they did largely the same thing.
10   Q. What's the basis for that belief?
11   A. That's what I saw going on in the hallways,
12 so . . .
13   Q. Did Procket Networks provide training to
14 the engineers of its customers?
15   A. Yes, very much so. We did exactly the same
16 thing. A lot of in-house training, a lot of
17 external documentation.
18   Q. And in -- so at all three of those vendors
19 that you worked for, the customers would pay the
20 vendor either directly or indirectly to provide
21 training to their engineers; correct?
22   A. Yes.
23   MR. PAK: Objection. Calls for
24 speculation.
25   BY MR. WONG: Q. And you know that because
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1 this e-mail.
2   A. Okay.
3   Q. Please take a moment to take a look at the
4 e-mail in Exhibit 144.
5   A. Mm-hmm.
6   Q. And the e-mail address on this e-mail, one
7 of the e-mails is tli@cisco.com.
8   Do you see that?
9   A. Yes.
10   Q. Is that your e-mail address?
11   A. Yes. Or was.
12   Q. Was that --
13   A. Was at the time, yes.
14   Q. And who is Peter Lothberg?
15   A. That's a complicated answer. Peter was a
16 contractor. As of 1992, I believe he was reporting
17 to the International Connection Manager Project that
18 was under contract to Sprint from NSF.
19   Q. Now, in this e-mail on Exhibit 144 on the
20 first page it says, "We are getting lots of pressure
21 to improve the user interface."
22   Do you see that?
23   A. Mm-hmm.
24   Q. Do you know what that's referring to,
25 Mr. Li?
Page 144

1 of your personal experience working at all three of
2 those vendors; correct?
3   A. Yes.
4   Q. Did the Cisco CLI follow a command syntax?
5   A. It tried to.
6   Q. What do you mean by "it tried to"?
7   A. It was inconsistently applied, and so it
8 was difficult from command to command to say what
9 the syntax was going to be.
10   MR. WONG: What exhibit number are we on?
11   THE REPORTER: 144.
12   MR. WONG: Let's mark this one as 144.
13   (Exhibit 144 was marked for identification
14 by the court reporter and is attached hereto.)
15   BY MR. WONG: Q. Okay. The court reporter
16 has marked as Exhibit 144 a document bearing Control
17 No. TS-00000066 to -67.
18   And for the record, the top portion of
19 first page of this exhibit has been redacted under
20 the protective order.
21   Mr. Li, just for your understanding,
22 communications that you either sent or received we
23 can show you under the protective order. The
24 portion that has been redacted is a communication
25 that you were not on, and so we have redacted it on
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1   A. Yes. There were lots of complaints about
2 the CLI. There were many people in the industry who
3 felt that a GUI interface was preferable to a CLI.
4   Q. And the date of this e-mail is what,
5 Mr. Li?
6   A. As shown, September 22nd, 1992.
7   Q. Now, the sentence at the bottom of
8 Exhibit 144 on the first page says, "I like the user
9 interface, as I'm TOPS-20/ITS Emacs from the
10 beginning."
11   Do you see that?
12   A. Yes.
13   Q. Do you know what that means, Mr. Li?
14   A. I believe that was Peter's response, and
15 that's him indicating that he was familiar with
16 TOPS-20, which is the DEC operating system I
17 mentioned earlier, as well as ITS, which is an MIT
18 operating system. And then Emacs is a popular text
19 editor that several people were familiar with at the
20 time.
21   Q. What were the similarities between the
22 Cisco user interface and TOPS-20?
23   A. So --
24   MR. PAK: Objection. Calls for expert
25 testimony.
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37 (Pages 142 - 145)

CONFIDENTIAL INFORMATION UNDER THE PROTECTIVE ORDER

1   THE WITNESS: So the Cisco user interface
2 was taken -- the model was TOPS-20, so many of the
3 external functionality in the CLI was similar to
4 TOPS-20. The specifics about the syntax and the
5 content were obviously somewhat different, and the
6 implementation was completely different.
7   BY MR. WONG: Q. When you say "the
8 implementation," are you -- what are you referring
9 to?
10   A. So the TOPS-20 implementation, the code for
11 that was written in a machine-specific language and
12 had very specific set of code. We did not attempt
13 to copy, reengineer or duplicate that in any way,
14 shape or form. We simply copied some of the
15 functionality.
16   Q. So the source code -- strike that.
17   So when you're referring to the
18 implementation being completely different, you're
19 referring to the underlying source code; is that
20 correct?
21   A. Yes. The source code was completely
22 different.
23   MR. PAK: Objection. Lacks foundation.
24   BY MR. WONG: Q. Mr. Li, how do you know
25 that the source code was completely different

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1 much of the semantics was the same.
2   BY MR. WONG: Q. When you say "the syntax
3 was completely different," was -- strike that.
4   Why was the syntax completely different in
5 the Juniper's command line interface?
6   A. So one of the complaints that we received
7 about the IOS syntax is that it was somewhat
8 haphazard and inconsistent. That made it very
9 difficult for IOS to parse, and it also made it
10 very, very difficult for customers to do anything
11 with the language in any programmatic fashion.
12   Customers wanted to generate and parse
13 configuration information on their own, and the
14 Cisco mechanisms for doing that were very
15 convoluted. The -- any reference to a syntactic
16 entity had to be taken in a very particular context
17 which was only given by a stream of actually parsing
18 the configuration itself. So if you lost any
19 positional information in the stream semantics, you
20 couldn't parse the actual terms.
21   The Juniper configuration syntax was
22 strictly hierarchical. It was very, very obvious
23 how to parse it, so it was much more modular.
24   Q. When you say "hierarchical" with reference
25 to the Juniper CLI, what do you mean by that?

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1 between TOPS-20 and Cisco IOS?
2   A. So I saw the Cisco IOS source code. It was
3 all written in C. It was all written by people at
4 Cisco.
5   The TOPS-20 source code very much was
6 written in DEC 10 Assembler.
7   Q. And you had familiarity with the TOPS-20
8 command syntax; correct?
9   A. Yes, I did.
10   Q. And what were the overlaps or similarities,
11 if any, between ITS or Emacs and Cisco IOS?
12   A. So I'm not familiar with ITS. I've
13 actually never had an ITS account.
14   Q. Okay. You can set that one aside.
15   Mr. Li, when you joined Juniper, did you
16 work on the command line interface?
17   A. I assisted, yes.
18   Q. What were the similarities, if any, between
19 the Juniper command line interface and the Cisco IOS
20 command line interface?
21   MR. PAK: Objection. Calls for expert
22 testimony.
23   THE WITNESS: So the common features were
24 common references to industry-standard terms, common
25 concepts. The syntax was completely different, but

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1   A. I meant that subsections in -- everything
2 was descended in a hierarchical fashion so every --
3 every portion of the configuration was a section
4 which was a subsection of another subsection, and
5 that could cascade arbitrarily.
6   Q. So when you say "subsection of another
7 subsection," can you provide me some examples of
8 what you mean by that?
9   A. So for example, an IP address
10 configuration, that would be a subset of a
11 particular interface configuration which would be a
12 subset of the interface section. And so you
13 could -- you select -- in descending the hierarchy,
14 you selectively selected things by specifying more
15 and more specific information that you wanted to
16 configure.
17   Q. So correct me if I'm understanding [sic]
18 your description of the hierarchy in the Juniper
19 CLI.
20   You would go from at the top of the
21 hierarchy something broader, and then you would go
22 to something more specific.
23   Is that what you're saying?
24   A. That's correct.
25   MR. PAK: Objection. Objection. Vague.

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38 (Pages 146 - 149)

CONFIDENTIAL INFORMATION UNDER THE PROTECTIVE ORDER

1   THE WITNESS: That's correct.
2   BY MR. WONG: Q. Did the Cisco IOS CLI
3 have that type of hierarchy that you just described?
4   A. Not explicitly. It was buried into -- in
5 the semantics of the commands themselves, and so
6 that made it very difficult to parse.
7   MR. PAK: Also object that it calls for
8 expert testimony.
9   Go ahead.
10   BY MR. WONG: Q. Now, Mr. Li, you -- did
11 you help -- strike that.
12   What involvement did you have, if any, in
13 creating the command hierarchy for the Juniper CLI?
14   A. Very little. Much of that was done by
15 Paul Traina and another guy who I'm sorry, I forget
16 his name. I should remember. But he was the lead
17 for creating the Juniper CLI.
18   Q. So how do you know that the Juniper CLI is
19 arranged in a hierarchical manner that you just
20 described?
21   A. It was one of the design discussions that
22 we had.
23   Q. And you were part of those discussions?
24   A. Yes.
25   Q. Now, you testified that the Cisco CLI was

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1 not explicitly hierarchical?
2   A. Correct.
3   Q. What do you -- what do you mean by not
4 explicitly hierarchical?
5   A. So there was no syntactic mechanism for
6 explicitly going -- leaving one context and moving
7 to the next context. For example, when you were
8 done configuring a particular routing protocol,
9 there was no way of telling the parser, "Hey, I'm
10 done. Move on to the next thing."
11   The parser had to figure it out because the
12 next thing you started talking about didn't make
13 sense in the previous context, and so you had to
14 context-switch based on the exact commands
15 presented.
16   Q. How would the lack of an explicit hierarchy
17 make it difficult for the parser in Cisco IOS to
18 function?
19   A. So again, it had to understand all of the
20 possible terms that could be applied next. That
21 meant that it had to -- it had to have tables that
22 it checked, and every command that you gave you had
23 to check at the current level, plus the level above
24 that, plus the level above that. And in doing this
25 check it, well, took time. That was awkward.

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1   Q. To what extent would have having an
2 explicit hierarchy have impacted the way the Cisco
3 IOS parser work?
4   MR. PAK: Objection. Calls for
5 speculation. Calls for expert testimony.
6   THE WITNESS: So I do have a Ph.D. in
7 programming languages. Come on.
8 ████████████████████████
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21 familiar -- strike that.
22   What was your experience in working with
23 the Cisco CLI parser when you were working at Cisco?
24   A. So I found there -- the parser went through
25 at least two major changes that I know about. The

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1 initial parser was very simple. It was very
2 straightforward to work with from a programmer point
3 of view, but it did not encourage any kind of
4 commonality, and it required a great deal of fairly
5 primitive coding on the part of all engineers.
6   About 1992, '93, Terry Slattery -- and I
7 think that's his e-mail on Exhibit 144 -- he was
8 contracted to do a rewrite of the parser and make it
9 all table-driven. And they improved it somewhat,
10 but it was still extremely challenging.
11   Q. And you know all that from your time
12 working at Cisco?
13   A. And interacting directly with Terry's team.
14   Q. And through your work at Cisco, you
15 became -- or how -- strike that.
16   How familiar were you with how the parser
17 and Cisco IOS worked?
18   A. The original implementation I helped debug,
19 so that was -- I had more than a passing familiarity
20 with it. Once Terry's team took over, I was able to
21 no longer do that, and his team owned that -- those
22 details. I simply was able to configure the tables.
23   Q. When you were working at Cisco, what
24 attention, if any, was paid to the command line
25 interfaces used by other vendors in the networking

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39 (Pages 150 - 153)

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1 industry?
2   A. Very, very little. The infrastructure, the
3 look and feel of the Cisco CLI had already been set.
4 The model was very clear from TOPS-20. We didn't
5 feel that we had to look too much to anybody else.
6   Q. After you worked at Juniper, you worked at
7 Procket Networks; correct?
8   A. Correct.
9   Q. Did the Procket router product have a
10 command line interface?
11   A. Yes, it did.
12   Q. What was your role in the development of
13 Procket Networks' router CLI?
14   A. So as founder, director of software
15 engineering and pretty much the guy trying to drive
16 the entire software effort, I pretty much had full
17 control over that.
18   Q. And what decisions did you make when
19 developing the Procket Networks router's CLI?
20   A. So our goal was to make the Procket CLI be
21 as compatible with the Cisco CLI as possible to
22 maximize customer adoption.
23   Q. What do you mean by "as compatible with the
24 Cisco CLI as possible"?
25   A. We attempted to completely mimic the

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1   A. More precisely, we did not try to emulate
2 the full command set since we were not a
3 multiprotocol router. We tried to emulate the full
4 command set found in the IP routing portion of Cisco
5 IOS plus all of the basic system management
6 commands.
7   Q. And did you work directly in this process
8 of mimicking the Cisco IOS CLI?
9   A. No. I was not directly involved in most of
10 the coding for that.
11   Q. So how do you know that the IP routing
12 command sets were replicated in the Procket Networks
13 CLI?
14   A. I mandated -- I effectively mandated that
15 as a part of being supervisor.
16   Q. What about command responses? Were the
17 command responses in the Procket Networks router CLI
18 the same as the command responses in the Cisco IOS
19 CLI?
20   A. They were the same, again, with exceptions
21 as noted previously.
22   Q. What type of -- can you give me an example
23 of an exception that would apply to command
24 responses?
25   A. I believe that the way we did things, we

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1 Cisco's CLI. We found several instances where even
2 the customers hated the current Cisco CLI, and they
3 encouraged us to change things, but these were very
4 specific syntax and semantic -- very specific
5 commands that they wanted corrected.
6   Q. How does completely mimicking the Cisco CLI
7 in Procket Networks' router ensure compatibility?
8   A. So it meant that the customers could issue
9 commands that were syntactically and semantically
10 identical to what Cisco did.
11   Q. And when you refer to the customers there,
12 you're talking about Procket Networks customers;
13 right?
14   A. Yes.
15   Q. In what ways did the Procket Networks'
16 router's CLI mimic the Cisco IOS CLI?
17   A. We attempted to replicate the syntax and
18 semantics of the CLI completely at a functional
19 level.
20   Q. So what aspects of the Cisco IOS CLI are --
21 were mimicked in the Procket Networks CLI?
22   A. Everything we could manage to functionally
23 recreate we did, with a few exceptions as noted.
24   Q. Does that include the command set supported
25 by Cisco IOS CLI?

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1 changed, for example, the BGP peer group, the way
2 that was configured, and there was command responses
3 that were changed accordingly.
4   Q. How would customers communicate to Procket
5 Networks that it wanted a deviation from the Cisco
6 IOS CLI?
7   A. Typically we would receive an e-mail or
8 have a direct personal communication.
9   Q. Besides the command sets and the command
10 responses, what else did -- strike that.
11   Besides the command sets and command
12 responses, what other aspects of the Cisco IOS CLI
13 did Procket Networks mimic in its CLI?
14   A. We mimicked semantics, syntax, command line
15 completion, escape completion. As many -- as much
16 of the CLI as we possibly could.
17   Q. What is escape completion?
18   A. So if you're in the middle of typing a
19 command and you hit "escape," it completes the
20 current word. "Tab," it does a completion, and then
21 prompts you for the next qualifier. There were a
22 variety of small features like that.
23   Q. You testified earlier that customers of
24 Cisco would get upset if even typos were corrected
25 in command responses; correct?

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40 (Pages 154 - 157)

1   A. Correct.
2   Q. Did the Procket Networks CLI -- strike
3 that.
4   To what extent did the Procket Networks CLI
5 preserve errors that might have been present in the
6 Cisco IOS CLI?
7   A. My directive to my team was to be
8 bug-for-bug compatible.
9   Q. And what does bug-for-bug compatible mean?
10   A. That meant that we would endeavor to
11 recreate something that worked exactly like the
12 Cisco CLI, including the bugs. And that extended
13 down into the functionality below the CLI too.
14   Q. During the time period that you gave the
15 directive to replicate the Cisco CLI, were -- what
16 other vendors were using a CLI that were similar to
17 Cisco?
18   MR. PAK: Objection. Calls for
19 speculation.
20   THE WITNESS: At the very least
21 Foundry Networks was using this. I believe also
22 Extreme and Force10 were using this.
23   BY MR. WONG: Q. And how do you know that,
24 Mr. Li?
25   A. So I knew about Foundry directly and heard

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1 about it using the Cisco CLI through industry
2 sources.
3   I had a friend who was working at Extreme,
4 and then I also have another friend who was at
5 Force10.
6   Q. And when did you first come to know that
7 Foundry was using a CLI that was similar to Cisco's?
8   A. I don't remember the details but certainly
9 prior to my joining Procket.
10   Q. And you joined Procket in --
11   A. '99.
12   Q. 1999. Thank you. And when did you first
13 come to learn that Extreme Networks was using a CLI
14 that was similar to Cisco IOS?
15   A. I don't recall.
16   Q. Was -- do you recall whether it was before
17 or after you started at Procket Networks?
18   A. I don't recall.
19   Q. And at what time did you discover that
20 Force10 was using a CLI that was similar to Cisco
21 IOS?
22   A. I don't recall.
23   Q. You don't recall whether that was before or
24 after you started at Procket?
25   A. No, I can't.

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1   MR. PAK: I'll just object to this line of
2 questioning as lacking foundation.
3   BY MR. WONG: Q. Did you ever look at the
4 command line interfaces that were used by
5 Foundry Networks?
6   A. No, I did not.
7   Q. So your knowledge of what Foundry was using
8 came through -- I think you used the term "industry
9 sources"; is that right?
10   A. Call it hearsay.
11   Q. What other industry sources besides the
12 ones you mentioned did you hear -- strike that.
13   Were there any other industry sources that
14 you heard from regarding other vendors' use of
15 Cisco-like CLIs?
16   A. Network World, just a trade rag in the
17 network industry. Stuff on the Internet. Mailing
18 lists such as the NANOG mailing list is very
19 popular.
20   Q. So you have a specific recollection of
21 Networking World articles talking about other
22 vendors using Cisco0like CLIs?
23   A. That was one of the possible sources. I
24 don't remember the specific sources.
25   Q. Do you remember the mailing lists you

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1 mentioned discussing the use of under -- vendors
2 using Cisco CLI?
3   A. So again, that's one of the possible
4 sources. I don't recall exactly where I heard it
5 first.
6   MR. PAK: Again, I'll object to this line
7 of questioning as lacking foundation.
8   BY MR. WONG: Q. Why did you think it was
9 okay to use the syntax of Cisco IOS CLI in the
10 Procket Networks CLI?
11   MR. PAK: Objection. Calls for legal
12 testimony and expert opinion.
13   THE WITNESS: So we felt that we had ample
14 precedent with Foundry using Cisco's CLI. And since
15 Cisco was not pursuing that, we saw no reason not
16 to.
17   BY MR. WONG: Q. When you say "we," who is
18 "we"?
19   A. Management at Procket Networks.
20   Q. And who was part of the management at
21 Procket Networks?
22   A. Bill Lynch, Sharad Mehrotra, I guess I
23 would also include Stu Phillips as investor.
24   Q. And was there a particular discussion that
25 you discussed the Foundry precedent for using

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41 (Pages 158 - 161)

1 Cisco's CLI in the Procket Networks product?
2   A. Yes, it was discussed.
3   Q. And you have a specific memory of
4 discussing the Foundry precedent of using Cisco's
5 CLI when making the decision to use Cisco's CLI in
6 Procket Networks' router?
7   A. Yes.
8   Q. Were there any similarities with the
9 implementation of the command line interface between
10 Procket Networks and Cisco IOS?
11   A. No. In fact, we had looked at Terry's code
12 quite carefully but decided we did not like that at
13 all, and we reimplemented some mechanism that was
14 completely backwards from what he was doing.
15   Q. So the source code used by Procket Networks
16 was different from the source code that was used by
17 Cisco IOS?
18   A. Correct.
19   Q. Did Procket Networks ever ask Cisco for
20 permission to use the command syntaxes of -- from
21 Cisco IOS in Procket Networks' products?
22   A. No, we did not.
23   Q. And why didn't you? Or strike that.
24   Why didn't Procket Networks ask Cisco for
25 permission to use the command sets?

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1   A. We felt that, given the Foundry precedent,
2 that Cisco was not going to create an issue.
3   Q. And Mr. Li, did Cisco ever object to
4 Procket Networks' use of the Cisco CLI in the
5 Procket Networks' router?
6   A. No, they did not.
7   Q. How do you know that?
8   A. So I was part of the Cisco -- Procket
9 Networks management. Some of the time I was a board
10 member, and Cisco never notified us that there was
11 an issue. Cisco had ample opportunity, had board
12 observer rights at Procket and never issued any kind
13 of comment.
14   Q. When you say Cisco "had board observer
15 rights at Procket," what do you mean by that?
16   A. Cisco was an investor in Procket Networks
17 and, as part of their investment, had a board
18 observer status at Procket. I don't know if they
19 ever did anything with the materials that we sent to
20 them, but we never received a complaint.
21   MR. WONG: Let's mark this as the next
22 exhibit in order, please.
23   (Exhibit 145 was marked for identification
24 by the court reporter and is attached hereto.)
25   MR. WONG: Let's mark several right now.

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1 There is 146.
2   (Exhibit 146 was marked for identification
3 by the court reporter and is attached hereto.)
4   MR. WONG: One more. Let's mark this one
5 as 147, please.
6   (Exhibit 147 was marked for identification
7 by the court reporter and is attached hereto.)
8   BY MR. WONG: Q. Court reporter has marked
9 three documents as Exhibits 145, 146 and 147.
10   Mr. Li, please take a moment to look at
11 these three exhibits. Let's start with Exhibit 145.
12   Mr. Li, do you recognize Exhibit 145?
13   A. I do.
14   Q. What is Exhibit 145?
15   A. This is part of the documentation produced
16 by Procket Networks for an introduction to the
17 software that Procket produced.
18   Q. And how do you know that this was part of
19 the documentation produced by Procket Networks?
20   A. That's our logo on the top.
21   Q. And had you seen when you worked at
22 Procket Networks any of the documentation that it
23 released for its products?
24   A. Yes, I helped manage that.
25   Q. Do you have any doubt that Exhibit 145 is a

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1 Procket Networks documentation?
2   A. Well, I haven't examined it in microscopic
3 detail, but it largely looks familiar.
4   Q. What is the title of Exhibit 145?
5   A. "Software Introduction."
6   Q. Look at Exhibit 146, Mr. Li.
7   Do you recognize Exhibit 146?
8   A. Yes. This appears to be a copy of the
9 Procket Networks IPv6 Routing Protocols
10 implementation.
11   Q. And how do you know that?
12   A. This appears to be the documentation that
13 my team produced to document how you do IPv6
14 routing.
15   Q. And when you say that your team produced
16 this, what do you mean by your team?
17   A. Again, I was helping to manage the software
18 documentation team.
19   Q. Do you have any doubt that Exhibit 146 is
20 Procket Networks documentation?
21   A. No, none at all. That's our logo on the
22 top.
23   Q. If you look at Exhibit 147, do you
24 recognize Exhibit 147?
25   A. Yes, I do.

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42 (Pages 162 - 165)

1   Q. What is Exhibit 147?
2   A. This is the Procket Networks system
3 management and operations guide.
4   Q. And how do you know that, Mr. Li?
5   A. This looks like the documentation that my
6 team produced for management of the Procket router.
7   Q. Are there any other Procket Networks
8 manuals in addition to the three that we just looked
9 at: Exhibits 145, 146 and 147?
10   A. Yes. There's several. We're missing at
11 least the IPv4 routing protocols guide. I believe
12 there was a command reference guide.
13   Q. Do you have copies of any of the other
14 command reference manuals that haven't been marked
15 today as exhibits?
16   A. No, I do not. I was asked to destroy all
17 copies as part of the acquisition.
18   Q. Who asked you to -- strike that.
19   When you say "as part of the acquisition,"
20 what do you mean? What do you mean by that?
21   A. When Cisco acquired the intellectual
22 property of Procket Networks, lawyers and managers
23 on both sides directed everyone to destroy any
24 intellectual property they had relating to
25 Procket Networks.

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1   Q. And because of that, you don't have any
2 copies of Procket Networks documentation; is that
3 correct?
4   A. That's correct.
5   Q. Do you know if Cisco would have copies of
6 Procket Networks documentation?
7   MR. PAK: Objection. Calls for
8 speculation.
9   THE WITNESS: I have no idea.
10   BY MR. WONG: Q. Did Cisco ever threaten a
11 lawsuit against Procket Networks for using the same
12 CLI commands and command responses that were in
13 Cisco IOS?
14   A. Not to my knowledge.
15   (Discussion off the record.)
16   MR. WONG: Let's mark this as 148, please.
17   (Exhibit 148 was marked for identification
18 by the court reporter and is attached hereto.)
19   BY MR. WONG: Q. The court reporter has
20 marked as Exhibit 148 a document that says on the
21 front it is the -- "Cisco's Sixth Supplemental
22 Response to Interrogatory No. 16 and Response to
23 Interrogatory No. 19" dated January 12th, 2016,
24 Amended Exhibit F.
25   Mr. Li, I'll represent to you this is a

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1 document that Cisco produced during this case in the
2 course of discovery.
3   A. Okay.
4   Q. If you could turn to page 5 of Exhibit 148,
5 do you see that you are identified at the bottom row
6 in page 5?
7   A. I see that.
8   Q. And similarly on page 10 of this document,
9 do you see that you are identified second from the
10 bottom row?
11   A. I see that.
12   Q. Page 13 of this document, do you see that
13 you are identified twice in rows 2 and 3?
14   A. I see those.
15   Q. On page 20, Mr. Li, do you see that you are
16 identified in the last row of Exhibit 20?
17   A. I see that.
18   Q. I'm sorry. Excuse me.
19   A. Page 20.
20   Q. You are identified on the last row of page
21 20 of Exhibit 148.
22   A. I see that.
23   Q. And on page 21 of the same exhibit, the
24 last three rows, do you see that your name is there?
25   A. I see that.

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1   Q. On page 22, do you see that your name is
2 identified in the fourth row from the top?
3   A. I see that.
4   Q. And on page 28, your name is identified
5 second row from the bottom.
6   Do you see that?
7   A. I see that.
8   Q. Okay. Page 29, do you see your name
9 identified second row from the top?
10   A. I see that.
11   Q. Then on page 30, third row from the top, do
12 you see that your name has been identified?
13   A. I see that.
14   Q. And finally on page 38, second row from the
15 top, do you see that your name has been identified
16 there?
17   A. I see that.
18   MR. WONG: Okay. Now, for ease of
19 referring to the commands that are next to your
20 name, Mr. Li, let's mark as Exhibit 149 this
21 document.
22   (Exhibit 149 was marked for identification
23 by the court reporter and is attached hereto.)
24   MR. WONG: Now, Mr. Li, you can --
25 actually, why don't we take the time right now to go

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43 (Pages 166 - 169)

1 it would look like. And then we would fire off that
2 e-mail to the relevant developers in the group, say,
3 you know, what do you think. They would either say,
4 "Yeah, sounds good" or "No, that stinks. What about
5 this?"
6   Q. So when you referred to the 24-hour period
7 for getting consensus on a command syntax, are you
8 referring to the time it takes to get a response
9 from the team?
10   A. Yes.
11   Q. So you as a contributor of the 13 commands
12 on Exhibit 149 would not spend 24 continuous hours
13 working on the command syntax; correct?
14   A. No. It would be much shorter than that.
15   Q. So setting aside the delay that might occur
16 when getting feedback from other members of your
17 team, approximately how much time do you think was
18 spent coming up with the command syntax for the
19 commands listed on Exhibit 149?
20   MR. PAK: Objection. Compound. Lacks
21 foundation.
22   THE WITNESS: Not more than an hour or two
23 each.
24   BY MR. WONG: Q. And on what facts are you
25 basing that testimony?

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1   A. On my experience implementing commands.
2   MR. WONG: Let's mark this, please, as
3 Exhibit 150.
4   (Exhibit 150 was marked for identification
5 by the court reporter and is attached hereto.)
6   BY MR. WONG: Q. Court reporter has marked
7 as Exhibit 150 a document bearing Control
8 No. CSI-CLI-00746246.
9   Mr. Li, please take a moment to look at
10 Exhibit 150.
11   A. Okay.
12   Q. What is Exhibit 150?
13   A. This appears to be a mail from myself to
14 Bill Westfield, also known as Chops, and it appears
15 to be my response to his proposal.
16   Q. So this is your response to Bill's
17 proposal; correct?
18   A. I think. The -- the sample is lacking any
19 indenting or indication of what was quoted here.
20 But based on the context, I'm not sure exactly what
21 was proposal here and what was response.
22   Q. Okay. Well, setting aside who did the
23 original proposal, this was an e-mail that you sent;
24 correct?
25   A. Yes.

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1   Q. And the date of this e-mail is
2 January 20th, 1996; right?
3   A. Mm-hmm.
4   Q. So the command being discussed in this
5 e-mail is the "ip load-sharing" command; correct?
6   A. Yes.
7   Q. Now, in the first full paragraph in
8 Exhibit 150 that starts with the word "Yes," do you
9 see that?
10   A. Mm-hmm.
11   Q. It says, "I didn't have much choice as a
12 global command clearly wasn't sufficient and/or
13 acceptable."
14   Do you see that?
15   A. Yes, I do.
16   Q. Do you know what that means?
17   A. Yes. Again, Cisco's context -- Cisco's
18 command line and configuration is hierarchical. So
19 there are global commands, and then one of the
20 subcommand modes is interfaces. An interface is one
21 of the particular ports or external connectors on
22 the router, and each interface can be -- each
23 specific interface can be configured separately.
24   So the proposal here is to configure
25 load-sharing on a per-interface basis. The reason

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1 for doing this, as indicated, would be people felt
2 that having this be a global knob, i.e., affect all
3 of the router equally, was unacceptable.
4   Q. When you said people felt that having a
5 global knob was unacceptable, what people are you
6 referring to?
7   A. I'm not sure who that was at the time.
8   MR. WONG: Let's mark this one as 151,
9 please.
10   (Exhibit 151 was marked for identification
11 by the court reporter and is attached hereto.)
12   BY MR. WONG: Q. And Mr. Li, you use the
13 word "hierarchical" in your response there.
14   Is it -- is it still your belief that the
15 Cisco IOS is not explicitly hierarchical?
16   A. It is not explicitly hierarchical in
17 configuration languages. Very convoluted as a
18 result.
19   Q. So what did you mean there when you said
20 that "configuration is hierarchical" when you
21 explained what -- when you explained that sentence
22 in Exhibit 150?
23   A. So again, the hierarchy is implicit; It's
24 not explicit. And so this configuration command
25 load-sharing would have an effect on a per-interface

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1   Q. And is the show int account the same
2 command or different command than Entry 12 in
3 Exhibit 149?
4   A. That's a different command.
5   Q. What would typing an account do in this
6 brief in the serialized proposal that Mr. Hedrick
7 was making here --
8   MR. WONG: Objection. Vague.
9   BY MR. PAK: Q. -- if you know?
10   A. I'm very confused.
11   Q. When he type -- when he proposed "show int
12 account," do you have a sense of what he was
13 proposing in --
14   A. He's not proposing that. That was an
15 existing command.
16   Q. Okay. Existing command. As an existing
17 Cisco command?
18   A. Yes.
19   Q. Are you aware of any specific customer
20 documents that proposed the exact command expression
21 shown as show ip interface brief?
22   A. Yes. This document.
23   Q. And where does it say show ip interface
24 brief in this document?
25   A. The last sentence.

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1   Q. Okay. So here you would do show ip, but it
2 says int brief.
3   A. But again, the command is -- the CLI does
4 command completion. So "int" is a common
5 abbreviation for "interface." We don't really want
6 to type all that.
7   Q. Who would determine in the CLI interface
8 which abbreviations would be spelled out by the
9 auto-completion versus those that would not be?
10   A. It was automatic. The parser would
11 automatically complete as soon as things were
12 unambiguous.
13   Q. Do you know how Juniper implemented this
14 particular command functionality?
15   A. No, I do not.
16   Q. Let's go back to a few other things here
17 that was discussed. You mentioned the work you did
18 at Procket.
19 ██
██
██ ███████████████████████████████████
████████████████████
23   Q. And were you providing Cisco with technical
24 details of Procket's design at the time?
25   A. So again, Cisco had board observer rights.

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1 That did not mean it gave them complete design
2 parameters, but they were -- they had available to
3 them many of the discussions that happened at the
4 board level, and that included discussions about the
5 CLI and whether we could implement something that
6 was Cisco-like.
7   Q. Who was the board representative at Cisco?
8   A. Graeme Fraser was the board representative.
9   Q. On behalf of Procket, did you specifically
10 send a request to Cisco asking for permission to use
11 the CLI interface?
12   A. No, we didn't see it was necessary.
13   Q. How about the command output? Did you seek
14 any explicit permission --
15   A. No, we didn't think it was necessary.
16   Q. When you say "we didn't think it was
17 necessary," who were you referring to?
18   A. The Procket board in examining the
19 precedent set by Foundry and others felt that since
20 Cisco was not interested in protecting anything or
21 had no issues with this, would not care and simply
22 we would be bothering them for no purpose.
23   Q. But just so you're aware -- well, you
24 weren't aware at the time.
25   Back in 2003 time period, you weren't aware

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1 of Cisco's assertion of its intellectual property
2 over the CLI interface as part of the Huawei
3 litigation, were you?
4   MR. WONG: Objection. Vague.
5   THE WITNESS: I was unaware of any the
6 details of Huawei, and by 2003 it was irrelevant
7 anyway.
8   BY MR. PAK: Q. Were you aware that as
9 part of that settlement Huawei was required to
10 change its CLI interface?
11   A. No, I was not.
12   Q. You didn't look into that at the time?
13   A. Didn't care.
14   Q. You mentioned something earlier about
15 network errors that would come about because of
16 certain CLI commands that were used by Cisco
17 customers.
18   A. Test crash comes to mind, yes.
19   Q. And what did you mean by that?
20   A. Cisco implemented a CLI command that
21 actually crashed the system intentionally.
22   Q. Were you aware of any CLI commands that
23 resulted in network errors with Cisco customers for
24 which the CLI commands were not changed --
25   MR. WONG: Objection. Vague.

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1   Q. Rough date's fine.
2   A. A couple weeks ago we had a preliminary
3 conversation. Prior to that we had a phone call.
4   Q. And who was involved?
5   A. The two gentlemen on my left, Brian and
6 Ryan.
7   Q. And what did they tell you?
8   A. I'm sorry?
9   Q. What did they -- what did they say to you?
10   A. You want a word-by-word transcription? I
11 don't have a memory like that.
12   Q. At a high level, what was discussed?
13   A. We discussed the overall case. We had many
14 of the same discussions you've already heard today.
15   Q. Did they -- did Arista's counsel ask you to
16 be a testifying expert in this case? Did you do
17 some type of arrangement?
18   A. We have no arrangement whatsoever.
19   Q. Did you prepare a declaration or expert
20 report in connection with this case?
21   A. No, I did not.
22   Q. Were you given access to any Cisco
23 confidential information prior to this case other
24 than . . .
25   A. If any of this is Cisco confidential, I

1 have no idea. I have no Cisco confidential
2 information of my own outside of this case.
3 Anything from previous employment has all been
4 either returned or destroyed.
5   Q. So I take it you don't have any personal
6 documents in your records relating to your work at
7 Cisco?
8   A. Well, of course I have my own personal
9 employment records, but nothing confidential that I
10 know of.
11   Q. Were you shown any documents from Cisco's
12 files in preparing for today's deposition that
13 refreshed your recollection?
14   A. Nothing that's not already here.
15   Q. Were you shown some of these documents?
16   A. I believe Exhibit 149. I saw something
17 similar to this.
18   Q. Going back to the -- your work on the
19 parser police, to your knowledge did Cisco require
20 that every CLI command expression be approved by the
21 parser police before it's adopted?
22   A. That depends on your definition of the word
23 "require." Certainly prior to the existence of
24 parser police, no. Even after parser police was
25 created, what we found out was that parser police

1 had no teeth, that Cisco management would ignore the
2 requests or the recommendations from the parser
3 police anyway and ship anything that they darn well
4 felt like anyway.
5   Q. And you talked earlier about the tension
6 between the marketing groups and the engineering
7 groups within Cisco about how to design the CLI
8 interface for Cisco's products.
9   Do you recall that testimony?
10   A. Mm-hmm.
11   Q. Based on your experience working at Cisco,
12 did the engineering groups always win out, or did
13 sometimes the marketing groups win in terms of the
14 CLI selection in?
15   A. So largely, marketing was not too picky
16 about what we implemented as long as it was making
17 the customer happy. There are a couple of
18 exceptions that come to mind, but by and large it
19 was not an issue.
20   Q. And what are some of the exceptions that
21 you can think of?
22   ███████████████████████████
    █████████████████████████████
    █████████████████████
25   Q. And what happened?

1   A. Basically the salespeople beat us with a
2 stick until we gave in.
3   Q. By the time -- actually, let me step back.
4   So when did you become involved with the
5 parser police concept initially?
6   A. Pretty much from the founding. Again, I
7 complained to management, and they suggested that
8 that was a way to fix the problem. Unfortunately,
9 they didn't mean it.
10   Q. And what time period are we talking about
11 here?
12   A. I have no idea.
13   Q. Was it in the early '90s?
14   A. Yes. Early '90s.
15   Q. Mr. Li, did any other engineers at Cisco
16 join you in your efforts to come up with the parser
17 police and provide comments?
18   A. Several others, but I don't recall who.
19   Q. When e-mails went around on the parser
20 police, were you the only one commenting on these
21 commands?
22   A. No. Several people would.
23   Q. Do you recall some of the other authors?
24   A. Not offhand.
25   Q. Can you think of specific instances where

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CONFIDENTIAL INFORMATION UNDER THE PROTECTIVE ORDER

1 standards organization like IETF?
2   A. I have never seen anyone do that. I have
3 never seen Cisco have any UI patents; so I don't
4 understand.
5   Q. Mr. Li, is there any other views or
6 opinions that you have with respect to this case
7 that you have not shared with us on the record that
8 you would like to share with us now?
9   MR. WONG: Objection. Vague.
10   THE WITNESS: I don't understand your
11 question.
12   BY MR. PAK: Q. We talked about a lot of
13 different topics. I'm giving you the opportunity to
14 provide any further testimony that you would like on
15 any of these topics if you'd like it.
16   A. So I don't understand what intellectual
17 property people think there is in some CLI syntax.
18 The intellectual property is -- that's of
19 significance gets covered in patents. If we thought
20 it was worth protecting, we would copyright it. We
21 would patent it.
22   MR. WONG: Object to the form of the
23 question.
24   BY MR. PAK: Q. Do you believe that
25 copyright is a form of intellectual property?

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1   MR. WONG: Objection. Calls for opinion
2 testimony.
3   THE WITNESS: It calls for legal testimony.
4 I don't understand.
5   BY MR. PAK: Q. What is your understanding
6 of copyright law?
7   MR. WONG: Same objection.
8   THE WITNESS: Vague as best.
9   BY MR. PAK: Q. I take it, sir, that you
10 haven't analyzed any copyright laws relating to
11 interface, APIs, user interfaces?
12   A. I know that I'm supposed to put a copyright
13 notice in the top of every source code file. That's
14 about all I know.
15   Q. Okay.
16   A. I can't even tell you for certain what I'm
17 supposed to put in the top of the file because
18 nobody can tell me exactly how I should deal with
19 multiple years.
20   MR. PAK: Thank you. Sir, I think those
21 are the questions I have for you today.
22   MR. WONG: I have no further questions.
23 ////
24
25

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1   THE VIDEOGRAPHER: Okay. This marks the
2 end of DVD No. 4 in the deposition of Anthony Li.
3   Going off the record. The time is 4:17.
4   (TIME NOTED: 4:17 p m.)
5   --o0o--
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1   I, ANTHONY J. LI, do hereby declare under
2 penalty of perjury that I have read the foregoing
3 transcript; that I have made any corrections as appear
4 noted, in ink, initialed by me, or attached hereto; that
5 my testimony as contained herein, as corrected, is true
6 and correct.
7   Executed this _____ day of _____,
8 2016, at _____, _____.
9   (city)   (state)
10
11
12
13
14   _____
15   ANTHONY J. LI
16   Volume I
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1   I, the undersigned, a Certified Shorthand
2 Reporter of the State of California, do hereby
3 certify:
4   That the foregoing proceedings were taken
5 before me at the time and place herein set forth;
6 that any witnesses in the foregoing proceedings,
7 prior to testifying, were administered an oath; that
8 a record of the proceedings was made by me using
9 machine shorthand which was thereafter transcribed
10 under my direction; that the foregoing transcript is
11 a true record of the testimony given.
12   Further, that if the foregoing pertains to
13 the original transcript of a deposition in a Federal
14 Case, before completion of the proceedings, review
15 of the transcript [X] was [ ] was not requested.
16   I further certify I am neither financially
17 interested in the action nor a relative or employee
18 of any attorney or any party to this action.
19   IN WITNESS WHEREOF, I have this date
20 subscribed my name.
21   Dated: February 3, 2016
22
23
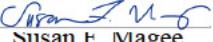
24   Susan F. Magee
25   CSR No. 11661, RPR, CCRR, CLR

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